

# HALLIBURTON

iCem<sup>®</sup> Service

## **HALLIBURTON ENERGY INSTITUTE**

United States of America, IDAHO

**For: RANDY WALCK**

Date: Thursday, November 15, 2018

### **BELL 17-2 Production Post Job Report**

BONNEVILLE, BELL 17-2

ESR CAPSTAR 316 BELL 17-2 PRODUCTION

Job Date: Thursday, November 15, 2018

Sincerely,

**Rock Springs Engineering**

## Legal Notice

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services for this cementing services job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton, Rock Springs

**Job Times**

	Date	Time	Time Zone
Called Out	11/15/18	0400	MST
On Location	11/15/18	1230	MST
Job Started	11/15/18	1600	MST
Job Complete	11/15/18	1800	MST
Depart Location	11/15/18	1900	MST

### 1.2 Job Overview

		<b>Units</b>	<b>Description</b>
<b>1</b>	Surface temperature at time of job	°F	45
<b>2</b>	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	WBM
<b>3</b>	Actual mud density	lb/gal	8.7
<b>4</b>	Time circulated before job	HH:MM	02:00
<b>5</b>	Mud volume circulated	Bbls	600
<b>6</b>	Rate at which well was circulated	Bpm	7
<b>7</b>	Pipe movement during hole circulation	Y/N	N
<b>8</b>	Rig pressure while circulating	Psi	250
<b>9</b>	Time from end mud circulation to start of job	HH:MM	00:10
<b>10</b>	Pipe movement during cementing	Y/N	N
<b>11</b>	Calculated displacement	Bbls	165.3
<b>12</b>	Job displaced by	Rig/HES	HES
<b>13</b>	Annular flow before job	Y/N	N
<b>14</b>	Annular flow after job	Y/N	N
<b>15</b>	Length of rat hole	Ft	28
<b>16</b>	Units of gas detected while circulating	Units	0
<b>17</b>	Was lost circulation experienced at any time ?	Y/N	N

## 1.3 Planned Pumping Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft <sup>3</sup> /sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
WBM	1	9.00	5.00			0.00		0.00
Bottom Plug								
Fresh Water	2	8.34	5.00			20.00		4.00
BondCem RS6 14.5 ppg	3	14.50	5.00	1.4275	5.961	128.39	505.00	25.68
Top Plug/Start Displacement								
MMCR Water	4	8.40	5.00			65.00		13.00
Fresh Water	5-1	8.34	5.00			90.00		18.00
Fresh Water	5-2	8.34	2.00			6.79		3.39
Drop Opening Tool								40.00
Pressure up to open tool							700 – 1000 psi	
Circulate hole	2	9.00	6.00			390.00		65.00
<b>End Stage 1 – WOC to hit 50 psi before beginning Stage 2</b>					<b>Total:</b>	<b>700.18</b>		<b>169.07</b>
Fresh Water	3-2	8.34	5.00			20.00		4.00
EconoCem RS16	4	12.50	5.00	1.7846	9.459	222.49	700.00	44.50
HalCem	5	15.80	5.00	1.5157	6.176	16.20	60.00	3.24
Top Plug/Start Displacement								
MMCR Water	6-1	8.40	5.00			100.00		20.00
MMCR Water	6-2	8.40	2.00			14.97		7.48
						<b>Total:</b>	<b>373.66</b>	<b>79.22</b>

Job was changed to a single stage design and the HalCem (60 sk tail) was not pumped.

1.4 Water Analysis Report

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**CEMENT MIX WATER REQUIREMENTS**

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Temperature	65	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

## 2.0 Real-Time Job Summary

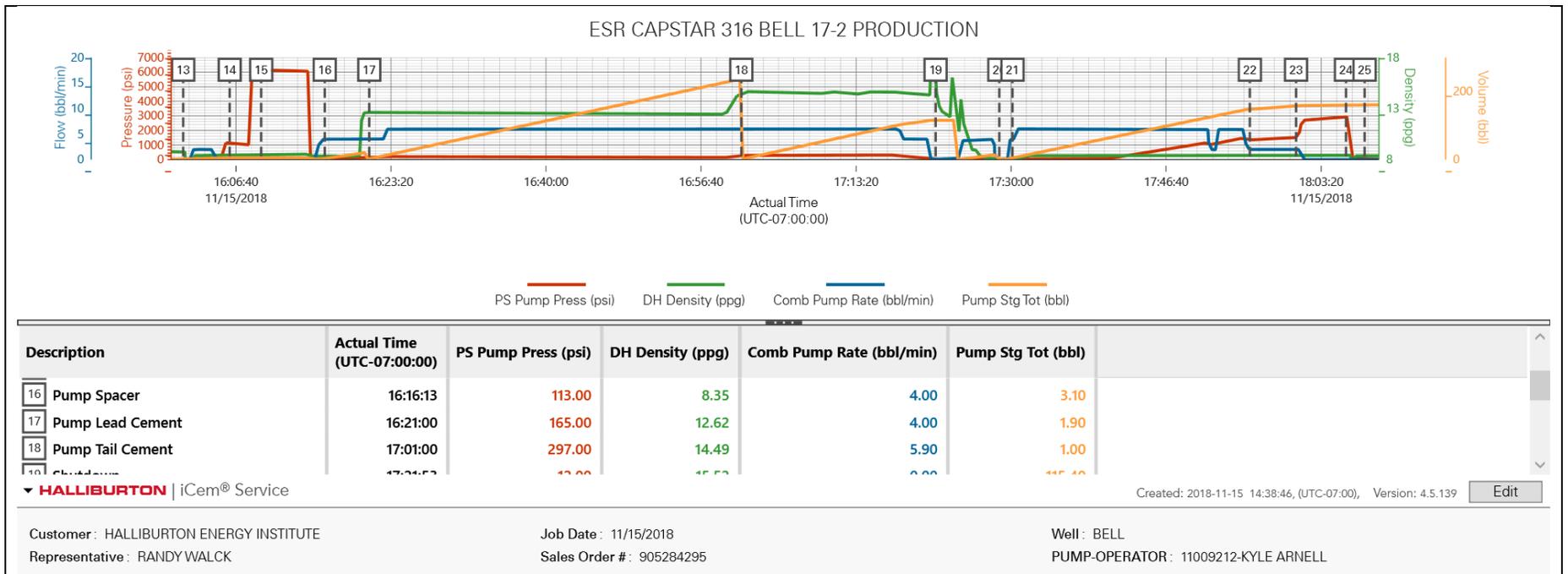
### 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	11/15/2018	04:00:00	USER					HES crew called out at 0400 on 11/15/18, crew arrived on location at 1230 on 11/15/18
Event	2	Pre-Convoy Safety Meeting	11/15/2018	06:00:00	USER					
Event	3	Depart from Service Center or Other Site	11/15/2018	06:20:00	USER					
Event	4	Arrive At Loc	11/15/2018	12:30:00	USER					
Event	5	Pre-Rig Up Safety Meeting	11/15/2018	13:30:00	USER					
Event	6	Rig-Up Equipment	11/15/2018	13:35:00	USER					
Event	7	WELL INFO	11/15/2018	13:40:00	USER					TD: __7014__, TP __6986__, SJ: __42__, OH: __8.325__, Casing: Size/Weight/Grade: __5.5__15.5__J55__, Previous Casing Shoe: __2038__
Event	8	RIG INFO	11/15/2018	13:45:00	USER					Rig Circulation: __600__ bbls, Rate __7__ bbl/min, Pressure __250__ PSI, MW __8.7__ ppg, Pipe Movement __No__, Rat Hole Length __28__
Event	9	Pre-Job Safety Meeting	11/15/2018	15:30:00	USER	2.00	8.80	0.00	0.00	
Event	10	Rig-Up Completed	11/15/2018	15:50:00	USER	2.00	8.79	0.00	0.00	
Event	11	Check Weight	11/15/2018	15:53:52	COM4	2.00	8.80	0.00	0.00	
Event	12	Mud Cup Sample Pulled	11/15/2018	15:55:00	USER	2.00	8.80	0.00	0.00	Mud Cup Sample Pulled
Event	13	Start Job	11/15/2018	16:01:00	USER	3.00	8.79	0.00	0.00	Start Job, pump 5 bbls of h2o ahead to fill pumps and lines
Event	14	Pressure Test	11/15/2018	16:06:00	USER	1069.00	8.37	0.00	5.10	500 psi low pressure kickout test
Event	15	Pressure Test	11/15/2018	16:09:23	USER	6126.00	8.51	0.00	5.10	Pressure test hes iron to 3500 psi

Event	16	Pump Spacer	11/15/2018	16:16:13	USER	113.00	8.35	4.00	3.10	Pump 20 bbls of h2o spacer
Event	17	Pump Lead Cement	11/15/2018	16:21:00	USER	165.00	12.62	4.00	1.90	Pump 740 sks of econocem Rs16 at 12.5 ppg, 1.79 ft3/sack, 9.44 gal/sack at 6 bpm
Event	18	Pump Tail Cement	11/15/2018	17:01:00	USER	297.00	14.49	5.90	1.00	Pump 445 sks of Bondcem Rs6 at 14.5 ppg, 1.43 ft3/sack, 5.95 gal/sack at 6 bpm
Event	19	Shutdown	11/15/2018	17:21:53	USER	12.00	15.52	0.00	115.40	Shutdown
Event	20	Drop Top Plug	11/15/2018	17:28:44	USER	26.00	8.05	0.00	0.00	Drop HES top plug, customer witnessed
Event	21	Pump Displacement	11/15/2018	17:30:09	USER	21.00	8.00	4.00	1.90	Pump 165.3 bbls of h2o displacement
Event	22	Slow Rate	11/15/2018	17:55:40	USER	1347.00	8.37	2.00	148.20	Slow Rate to 2 bpm last 20 bbls of H2O displacement
Event	23	Bump Plug	11/15/2018	18:00:38	USER	1512.00	8.38	2.00	157.90	bump Plug, pressure to 500 psi over fcp
Event	24	Check Floats	11/15/2018	18:06:00	USER	2956.00	8.40	0.00	159.00	Check Floats, 2.5 bbls back to HES cement pump
Event	25	End Job	11/15/2018	18:08:00	USER	21.00	8.38	0.00	159.00	End Job, final circulating pressure was 1850 psi
Event	26	Pre-Rig Down Safety Meeting	11/15/2018	18:15:00	USER	10.00	8.38	0.00	192.50	
Event	27	Rig-Down Equipment	11/15/2018	18:18:00	USER	54.00	8.37	3.20	195.50	
Event	28	Rig-Down Completed	11/15/2018	18:50:00	USER					
Event	29	Other	11/15/2018	18:55:00	USER					Items being returned: bottom plug and 120 pounds of sugar
Event	30	well info	11/15/2018	19:00:00	USER					H2O Spacer: __20__ bbl TOS __surface__ Lead Cement: __235__ bbl, __740__ sks, TOC __surface__ Tail Cement: __113__ bbl, __445__ sks, TOC __4497__ Displacement: __165.3__ bbl left in Pipe __42__ Reason __shoe joint__ CMT
Event	31	Job Complete	11/15/2018	19:20:00	USER					Job complete, estimated top of tail at 4497, got no lead back to surface just traces of Polly flake and water , Thank you- Nicholas Iverson

## 3.0 Attachments

### 3.1 ESR CAPSTAR 316 BELL 17-2 PRODUCTION -Custom Results.png



3.2 ESR CAPSTAR 316 BELL 17-2 PRODUCTION -Custom Results (1).png

